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UNITED STATES DISTRICT COURT
FOR THE CENTRAL DISTRICT OF CALIFORNIA

POLARIS POWERLED TECHNOLOGIES, LLC,

Plaintiff,

v.

VIZIO, INC.,

Defendant.

Case No. 8:18-cv-01571-JVS (DFMx)

PLAINTIFF POLARIS POWERLED TECHNOLOGIES, LLC'S SUPPLEMENTAL CLAIM CONSTRUCTION BRIEF

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I. INTRODUCTION

In U.S. Patent No. 8,223,117 ("'117 patent"), "configured to" should be construed to mean "actually implemented in hardware or software to" in the phrases "a first input configured to receive a user signal" in claim 1 and "a second input configured to receive a selection signal" in claim 9. Polaris' construction is strongly supported by the claim language and the preferred embodiments. Further, Polaris' construction is consistent with the Court's other constructions in this case.

II. "A FIRST INPUT CONFIGURED TO RECEIVE A USER SIGNAL INDICATIVE OF A USER SELECTABLE BRIGHTNESS SETTING"

The phrase "a first input configured to receive a user signal indicative of a user selectable brightness setting" in claim 1 should be construed as "a first input actually programmed or implemented with hardware or software to receive a user signal indicative of a user selectable brightness setting" for the following reasons. ***First***, the preferred embodiments in the specification describe implementations of "a first input configured to receive a user signal" in both hardware and software. For example, Figure 4 shows the "first input configured to receive a user signal" implemented in hardware at the PWM input.

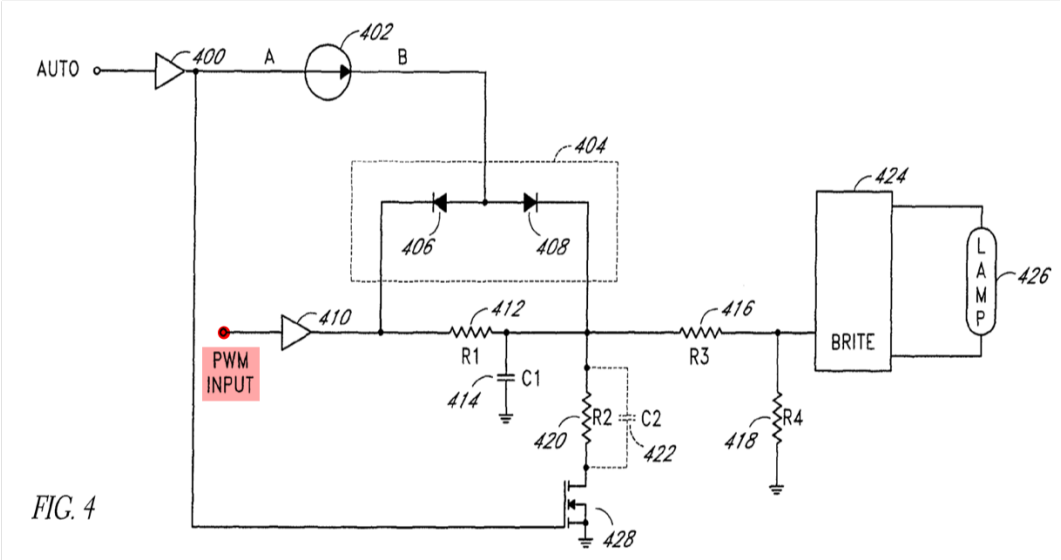


FIG. 4

Ex. A, Fig. 4.[1] In Figure 4, the "user signal" is a "user adjustable PWM logic signal

[1] All emphasis is added. Exhibits are attached to the Declaration of Aidan Brewster.

[that] varies in duty cycle from 0% for minimum user-defined brightness to 100% for maximum user-defined brightness." *Id*. at co. 6:25-28. The PWM logic signal is a pulse-width modulated signal, which is a hardware analog voltage signal. The PWM input is a "first input" that receives the PWM logic signal (*i.e.*, "user signal"). Supplemental Declaration of Dr. Balakrishnan ("Balakrishnan Supp."), ¶¶ 3-4.

The '117 patent's specification also describes embodiments in which the "first input configured to receive a user signal" is implemented in software. Software is a series of instructions executed by a processor. Balakrishnan Supp., ¶ 5. Software is normally written in a human-readable, high level language such as C++. *Id*. Software written in a human-readable, high level language is commonly referred to as source code. *Id*. Tools such as a compiler and assembler are typically used to translate source code into binary machine code software (*i.e.*, composed of 0s and 1s) that is loaded into memory and executed by a processor in a device. *Id*. at ¶ 6. The machine language software generated from source code contains digital words of a defined length that provide instructions regarding arithmetic and logic operations to be performed in the software. *Id*. The binary machine code software instructions and the values used by those instructions in software are represented as digital words when they are compiled from source code into memory on a device. *Id*. As explained by Professor Balakrishnan, tenured professor in the Computer Science Department at the University of Toronto, a digital word in machine code is a binary series of 0s and 1s. *Id*. For example, a 16-bit digital word in machine code could be "0010110011010011." *Id*. "Digital words" are also referred to as "binary words" because digital words consist of 0s and 1s (*i.e.*, binary). *Id*.

It was well-known in the art at the time of the '117 patent filing that a "digital word" is part of the compiled software running on a processor.[2] *Id*. at ¶7. For instance, a U.S. patent filed June 30, 2000, provides the following description of how source code is compiled into a sequence of digital words that comprise the

[2] The '117 patent claims priority to a provisional application filed February 9, 2004.

executable software that actually runs on the processor.

> ***The software which executes upon processors is a sequence of digital words*** known as machine code. This machine code is understandable by the hardware of the processors. However, programmers typically write programs in a higher-level language which is much easier for humans to comprehend. The ***program listings in this higher level language are called source code***. In order to ***convert the human-readable source code into machine-readable machine code***, several special software tools are known in the art. These software tools are compilers, linkers, assemblers, and loaders.

Ex. B (U.S. Patent No. 6,675,289), col. 1:15-25. Similarly, a U.S. patent filed June 3, 1992 explains that "digital words" are used in software programs:

> An EMG sensing circuit 64 conditions this input signal and converts it into a ***digital word for processing by software*** implemented on the personal computer 46 in FIG. 1.
>
> …entering a plurality of therapeutic parameters into the graphic interface, the ***parameters being represented as digital words in a computer program***…

Ex. C (U.S. Patent No. 5,300,096), col. 5:1-4, 14:10-13; Balakrishnan Supp., ¶ 8.

One of ordinary skill in the art would thus understand that the use of digital words in an embodiment would encompasses implementations in software. Balakrishnan Supp., ¶¶ 2, 9. In preferred embodiments of the '117 patent, one of ordinary skill in the art would similarly understand that the "first input configured to receive a user signal" is implemented in software using a digital, or binary, word as shown below. *Id*.

> The ***user preference*** can also be provided in other forms, such as a potentiometer setting or ***a digital signal (e.g., a binary word)***.
>
> In one embodiment in which ***the user preference is indicated by a digital word***,…
>
> 12. The brightness control circuit of claim 1, wherein ***the user signal corresponds to a digital word***, and the multiplier is implemented with a digital-to-analog converter configured to receive the digital word and a reference signal determined by the sensing signal to generate the brightness control signal.

Ex. A, cols. 3:28-30, 3:59-60, 13:20-24. One of ordinary skill in the art would

understand that a digital word is a binary word (*i.e.*, a series of 0s and 1s) in software. Balakrishnan Supp., ¶ 10; Ex. D (U.S. Patent No. 7,523,337), col. 4:26-27 ("A/D converter 910 outputs ***a digital word (e.g. a binary word)***…"); Ex. E (U.S. Patent No. 3,786,869, col. 2:34-35 ("The output of the encoder will be a ***binary word of four bits and this digital word*** will be repeated approximately every 100 milliseconds."). The '117 patent further states that "[t]he user input can come from processors in LCD devices," indicating the "first input configured to receive a user signal" can be in software running on a processor (as the main purpose of a processor is to execute software). Ex. A, col. 5:5-7; Balakrishnan Supp., ¶ 9.

Moreover, in Figure 9, a "digital word" value (*i.e.*, a series of 0s and 1) is used to represent the user signal indicative of a user selectable brightness setting.

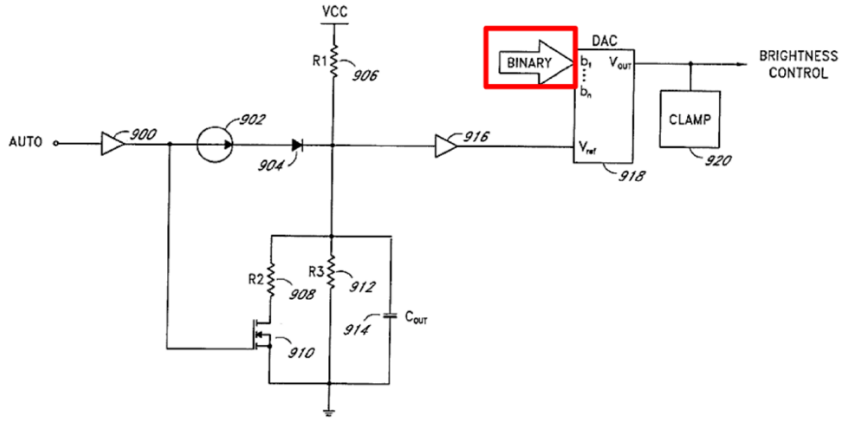
> FIG. 9 is a schematic diagram of one embodiment of a brightness control circuit with a multiplier circuit to combine a light sensor output with a ***user adjustable digital word***…A ***binary input (bn . . . b1) is used to indicate user dimming preference***. The DAC 918 generates an analog voltage (Vout) corresponding to the binary input.

Ex. A, col. 10:33-39. In a software implementation, the binary input would receive the digital word value (*i.e.*, user signal) in the software, and is thus "a first input configured to receive a user signal" in software. Balakrishnan Supp., ¶ 11.

It is important that the description of Figure 9, as shown above, states "The DAC 918 generates an analog voltage (Vout) corresponding to the binary input." Ex. A, col. 10:38-39. The fact that Figure 9 has a digital-to-analog converter (DAC) confirms that the digital word can be in software because a software digital word would require the conversion using a DAC as shown in Figure 9 to generate the required hardware analog voltage signal. Balakrishnan Supp., ¶ 12.

Figure 9 further shows that the binary input can be in software. In Figure 9, the "binary input" shown in the arrow goes directly into the DAC and is **not** part of the hardware circuitry. Balakrishnan Supp., ¶ 13. This is because the binary input can originate in software. *Id*.

FIG. 9



Ex. A, Fig. 9; Balakrishnan Supp., ¶ 13. Therefore, Polaris' construction should be adopted as the preferred embodiments disclose both hardware and software implementations. Balakrishnan Supp., ¶ 14.

Second, one of ordinary skill in the art would understand that the plain language of this limitation covers both hardware and software implementations. Balakrishnan Supp., ¶ 3. Nothing in the claim language "a first input configured to receive a user signal indicative of a user selectable brightness setting" excludes either hardware or software implementations. This limitation should thus have its plain meaning encompassing both hardware and software implementations.

Third, Polaris' construction is consistent with the Court's other constructions. The Court construed "a multiplier configured to selectively generate a combined signal based on both the user signal and the sensing signal" as "a multiplier actually programmed or implemented with hardware or software to selectively generate a combined signal based on both the user signal and the sensing signal." ECF 212 at 34. The "multiplier" can thus be implemented in software. *Id*. When the multiplier is implemented in software, the "user signal" and "sensing signal" must also be in software because a software multiplier can only perform actions on values *in the software*. Balakrishnan Supp., ¶¶ 15-16. If the "user signal" is in software, then the "first input configured to receive a user signal" would be the input of the user signal into the software. *Id*. Therefore, "a first input configured to receive a user signal" is

properly construed as "a first input actually programmed or implemented with hardware or software to receive a user signal," which is consistent with the claim language, preferred embodiments, and the Court's other constructions. *Id*. at ¶ 17.

III. "A SECOND INPUT CONFIGURED TO RECEIVE A SELECTION SIGNAL TO SELECTIVELY OPERATE THE BRIGHTNESS CONTROL CIRCUIT IN AN AUTO MODE OR A MANUAL MODE"

"A second input configured to receive a selection signal to selectively operate the brightness control circuit in an auto mode or a manual mode" in claim 9 should be construed to mean "a second input actually programmed or implemented in hardware or software to receive a selection signal to selectively operate the brightness control circuit in an auto mode or a manual mode." ***First***, the plain language of claim 9 does not exclude either hardware or software implementations. One of ordinary skill in the art would thus understand the "second input" limitation to encompass hardware and software implementations. Balakrishnan Supp., ¶ 18.

Second, the specification describes the "selection signal to selectively operate the brightness control circuit in an auto mode or a manual mode" broadly as an "enable signal" without limiting it to either a hardware or software signal.

> The ***manual mode*** excludes the visible light sensor 402, while the ***auto mode*** includes the visible light sensor 402 for automatic adjustment of display brightness as ambient light changes. ***An enable signal (AUTO) selects between the two modes.***
>
> In one embodiment, the brightness control circuit of FIG. 8 selectively operates in an ***auto mode or a manual mode***. ***An enable signal (AUTO) indicates the selection of operating mode***.

Ex. A, col. 6:38-42, 9:61-64.

One of ordinary skill in the art would understand the plain meaning of "signal" to encompass both hardware and software signals. Balakrishnan Supp., ¶ 20. For example, as shown below, it was recognized in the art that the plain meaning of "signal" includes both hardware and software signals. *Id*.

> The interface controller and display driver 64 processes the compensated output signal 60 and issues the necessary ***hardware or***

> ***software signals*** to the display 44…

Ex. F (U.S. Patent No. 6,104,969), col. 2:56-60.

> The event trigger signal 99 may, for example, be a ***hardware or software signal***…

Ex. G (U.S. Patent Pub. No. 2002/0188880), at [0026]; *see also* Ex. H, ¶ 147 ("If desired, the action may be a text entry into a dialog box, a striking of a key on a keyboard, a moving of a mouse, or a receiving of another ***hardware or software signal***."); Ex. I (U.S. Patent Pub. No. 2002/0012432), ¶ 279 ("Such a signal may be a ***hardware or software signal***…"); Ex. J, col. 7:37-40 ("…any other ***hardware or software signal***.").

One of ordinary skill in the art would understand "selection signal" to refer to a hardware or software signal in accordance with its plain meaning. Balakrishnan Supp., ¶¶ 20-21. Nothing in the specification or claims limits "selection signal" to being only a hardware signal or only a software signal. If the "selection signal" was an analog voltage signal, the "second input configured to receive" would likely be in hardware capable of receiving such an analog voltage signal. *Id*. at ¶ 21. Similarly, if the "selection signal" is a software signal, then the "second input configured to receive" that software "selection signal" would likely be in software *Id*. This is because software cannot directly receive an analog voltage signal.[3] *Id*.

Therefore, in light of the intrinsic evidence, one of ordinary skill in the art would understand "a second input configured to receive a selection signal to selectively operate the brightness control circuit in an auto mode or a manual mode" in claim 9 to mean "a second input actually programmed or implemented in hardware or software to receive a selection signal to selectively operate the brightness control circuit in an auto mode or a manual mode." *Id*. at ¶ 22.

IV. CONCLUSION

For the aforementioned reasons, the Court should adopt Polaris' constructions.

[3] An analog voltage signal would have to be converted into a digital software value in order to be received and used in software. Balakrishnan Supp., ¶ 21.

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